ANALYTICAL REPORT

Prepared by
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29 Riverside Avenue (Phase 2 Assessment)
Newark, New Jersey

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EPA Work Assignment No. SERAS-089
LOCKHEED MARTIN Work Order No. SER00089
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Appendix A will be furnished on request.

Environmental Response Team/Scientific Engineering, Response and Analytical Services
2890 Woodbridge Avenue, Building 209 Annex
Woodbridge NJ 08837

TESTING LABORATORIES INFORMATION

Analysis of Dioxins/Furans in Soil. (Method SW-846 8290A)

Cape Fear Analytical
3306 Kitty Hawk Road
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All analyses were performed according to our NELAP-approved quality assurance program. The test results meet the requirements of the current NELAP standards, where applicable, except as noted in the laboratory case narrative provided. Results are intended to be considered in their entirety and apply only to those analyzed and reported herein.

Cape Fear Analytical Laboratory is certified by the State of Utah Department of Health, Laboratory Certification ID # MC 01894.

Detailed Sample Information

Cape Fear Sample #	Field Sample #
2291001	089-0001
2291002	089-0002
2291003	089-0003
2291004	089-0004
2291005	089-0005
2291006	089-0006
2291007	089-0007
2291008	089-0008
2291009	089-0009
2291010	089-0010
2291011	089-0011
2291012	089-0012

Introduction

SERAS personnel, in response to WA# SERAS-089, provided analytical support for environmental samples collected from the 29 Newark Avenue (Phase 2 Assessment) Site, Newark, New Jersey as described in the following table. The support also included QA/QC, data review and preparation of an analytical report containing analytical and QA/QC results.

Chain of Custody #	Number of Samples	Sampling Date	Date Received	Date Analyzed	Matrix	Analysis/ Method	Laboratory	Data Package
2-041211-105201-0001	12	04/12/11	04/13/11	04/20/11 through 04/27/11	Soil	Dioxins/Furans/ SW-846 8290A	Cape Fear Analytical	W 089

Case Narrative

Sampling was conducted as per the site-specific Quality Assurance Project Plan (QAPP) and analyzed by the analytical methods stated in the QAPP. The laboratory reported the data to three significant figures. Any other representation of the data is the responsibility of the user. All data validation flags have been inserted into the results tables.

Dioxins/Furans in Soil Package W 089

The recovery standards for the samples showed retention time (RT) shifts greater than ±10 seconds. The laboratory compensated for the RT shifts by comparing the RTs of the samples versus the RTs of the internal standards in the daily calibration. The data validator used professional judgment in assessing the samples and found the laboratory RT adjustments were acceptable.

Method Blank 12003101 contained 2,3,7,8-TCDF and OCDD. The concentrations of 2,3,7,8-TCDF in samples 089-0007 and 089-0010 are qualified non-detect (U) because the 2,3,7,8-TCDF concentrations in the samples were less than the Reporting Limit (RL).

The concentration of OCDD exceeded the linear calibration range in samples 089-0001, 089-0002, 089-0009 and 089-0011. The concentrations of OCDD in these samples are qualified estimated (J).

The MS/MSD percent recoveries in sample 089-0003 for 1,2,3,7,8,9-HxCDF were outside the acceptable QC limits. The sample result for 1,2,3,7,8,9-HxCDF is qualified estimated (UJ).

Ether interference was present in the channel for 1,2,3,4,7,8,9-HpCDF in sample 089-0011. The concentration for this compound in this sample is qualified as an estimated most probable concentration (EMPC).

Due to lock mass ion drifts of greater than (>) 20 percent (%) in the retention time windows, the following samples and homologues are qualified accordingly in the following table. Homologues marked with an asterisk (*) indicate that the sample concentration has been adjusted for any ether interference.

Sample Number	Homologue	Flag
089-0001	Total PeCDD	J
	Total HxCDD	J
	Total TCDF	J
	Total PeCDF*	J
	Total HxCDF	J
089-0002	Total PeCDD	J
	Total TCDF*	J
	Total PeCDF	J
089-0003	Total TCDD	J
	Total PeCDD	J
	Total PeCDF*	J
089-0005	Total PeCDD	J
	Total PeCDF	J
089-0006	Total PeCDD	J
	Total HxCDD	J
	Total TCDF	J
	Total PeCDF*	J
	Total HxCDF	J
089-0007	Total PeCDD	J
	Total HxCDD	J
	Total PeCDF*	J
	Total HxCDF*	J
089-0008	Total PeCDF	J
	Total HxCDF*	J
089-0009	Total PeCDD	J
	Total PeCDF*	J
089-0010	Total TCDD	J
	Total PeCDD	J
	Total TCDF	J
	Total PeCDF	J
	Total HxCDF*	J
089-0011	Total PeCDD	J
	Total HxCDD	J
	Total PeCDF*	J
	Total HxCDF*	J
089-0012	Total PeCDD	J
	Total PeCDF*	J
	Total HxCDF*	J

Summary of Abbreviations

BFB	Bromofluorobenzene
C	Centigrade
CLP	Contract Laboratory Program
COC	Chain of Custody
conc	concentration
cont	continued
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
D	(Surrogate Table) value is from a diluted sample and was not calculated
Dioxin	Polychlorinated dibenzo-p-dioxins (PCDD) and Polychlorinated dibenzofurans (PCDF)
DFTPP	Decafluorotriphenylphosphine
EMPC	Estimated maximum possible concentration
GC/MS	Gas Chromatography/ Mass Spectrometry
IS	Internal Standard
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDA	Minimum Detectable Activity
MS (BS)	Matrix Spike (Blank Spike)
MSD (BSD)	Matrix Spike Duplicate (Blank Spike Duplicate)
MW	Molecular Weight
NA	Not Applicable or Not Available
NAD	Normalized Absolute Difference
NC	Not Calculated
NR	Not Requested/Not Reported
NS	Not Spiked
% D	Percent Difference
% REC	Percent Recovery
SOP	Standard Operating Procedure
ppbv	parts per billion by volume
ppm	parts per million
pptv	parts per trillion by volume
PQL	Practical Quantitation Limit
PAL	Performance Acceptance Limit
QA/QC	Quality Assurance/Quality Control
QL	Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SERAS	Scientific, Engineering, Response and Analytical Services
SIM	Selected Ion Monitoring
Sur	Surrogate
TIC	Tentatively Identified Compound
TCLP	Toxicity Characteristic Leaching Procedure
VOC	Volatile Organic Compound
*	Value exceeds the acceptable QC limits

m^3	cubic meter	g	gram	kg	kilogram	L	liter
µg	microgram	µL	microliter	mg	milligram	mL	milliliter
ng	nanogram	pg	picogram	pCi	picocurie	s	sigma

Data Validation Flags

J	Value is estimated	R	Value is unusable
J+	Value is estimated high (metals only)	U	Not detected
J-	Value is estimated low (metals only)	UJ	Not detected and RL is estimated
N	Presumptively present (Aroclors only)		

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Environmental Response Team/Scientific Engineering, Response and Analytical Services
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Table 1.1 Results of the Analysis for Dioxins/Furans in Soil
WA# SERAS-089 29 Riverside Avenue (Phase 2 Assessment)
Results Based on Dry Weight

Method SW-846 8290A

Lab Sample ID			2291001			2291002		
Sample No	Method Blank		089-0001			089-0002		
Location	12003101		NS-1			NS-2		
% solids	NA		86			89		
Analyte	Result pg/g	EMPC	RL pg/g	Result pg/g	EMPC	RL pg/g	Result pg/g	EMPC	RL pg/g
2378-TCDD	U		1.00	3.04		0.974	1.94		0.941
12378-PeCDD	U		5.00	9.48		4.87	3.95 J		4.70
123478-HxCDD	U		5.00	5.35		4.87	3.82 J		4.70
123678-HxCDD	U		5.00	29.9		4.87	12.4		4.70
123789-HxCDD	U		5.00	19.0		4.87	8.40		4.70
1234678-HpCDD	U		5.00	475		4.87	275		4.70
OCDD	0.444 J		10.0	8210 J		9.74	4910 J		9.41
2378-TCDF	0.336 J		1.00	22.5		0.974	5.34		0.941
12378-PeCDF	U		5.00	3.16 J		4.87	1.23 J		4.70
23478-PeCDF	U		5.00	11.6		4.87	3.87 J		4.70
123478-HxCDF	U		5.00	11.6		4.87	5.29		4.70
123678-HxCDF	U		5.00	7.23		4.87	3.20 J		4.70
234678-HxCDF	U		5.00	8.22		4.87	4.92		4.70
123789-HxCDF	0.220 J		5.00	1.08 J		4.87	0.440 J		4.70
1234678-HpCDF	U		5.00	90.2		4.87	52.0		4.70
1234789-HpCDF	U		5.00	7.99		4.87	3.84 J		4.70
OCDF	U		10.0	187		9.74	98.9		9.41
Total TCDDs	U		1.00	21.8		0.974	8.54		0.941
Total PeCDDs	U		5.00	48.9 J		4.87	21.3 J		4.70
Total HxCDDs	U		5.00	189 J		4.87	97.9		4.70
Total HpCDDs	U		5.00	906		4.87	549		4.70
Total TCDFs	0.336 J		1.00	278 J		0.974	58.9 J		0.941
Total PeCDFs	U		5.00	137 J		4.87	42.5 J		4.70
Total HxCDFs	U		5.00	128 J		4.87	77.7		4.70
Total HpCDFs	U		5.00	266		4.87	140		4.70
Total Adjusted Conc. WHO TEQ (ND=0)	0.0337			34.8			16.3		

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Table 1.1 (cont) Results of the Analysis for Dioxins/Furans in Soil
WA# SERAS-089 29 Riverside Avenue (Phase 2 Assessment)
Results Based on Dry Weight

Method SW-846 8290A

Lab Sample ID	2291003	2291004	2291005
Sample No	089-0003	089-0004	089-0005
Location	NS-3	NS-4	NS-5
% solids	75	99	97

Analyte	Result pg/g	EMPC	RL pg/g	Result pg/g	EMPC	RL pg/g	Result pg/g	EMPC	RL pg/g
2378-TCDD	6.20 J		9.35	0.311 J		0.778		0.362	0.948
12378-PeCDD	14.0 J		46.8	1.01 J		3.89	0.912 J		4.74
123478-HxCDD	12.5 J		46.8	0.876 J		3.89	1.09 J		4.74
123678-HxCDD	46.0 J		46.8	2.92 J		3.89	4.09 J		4.74
123789-HxCDD	31.7 J		46.8	2.08 J		3.89	2.92 J		4.74
1234678-HpCDD	810		46.8	46.9		3.89	62.3		4.74
OCDD	7850		93.5	455		7.78	599		9.48
2378-TCDF	16.3		9.35	1.29		0.778	1.67		0.948
12378-PeCDF	5.56 J		46.8	0.415 J		3.89	0.571 J		4.74
23478-PeCDF	23.2 J		46.8	1.47 J		3.89	2.13 J		4.74
123478-HxCDF	19.0 J		46.8	1.38 J		3.89	1.79 J		4.74
123678-HxCDF	11.2 J		46.8	0.883 J		3.89	1.11 J		4.74
234678-HxCDF	19.1 J		46.8	1.23 J		3.89	1.55 J		4.74
123789-HxCDF	U J		46.8	U		3.89	U		4.74
1234678-HpCDF	138		46.8	8.68		3.89	12.4		4.74
1234789-HpCDF	8.20 J		46.8	0.532 J		3.89	0.730 J		4.74
OCDF	273		93.5	16.9		7.78	22.0		9.48
Total TCDDs	30.8 J		9.35	0.512 J		0.778	0.952		0.948
Total PeCDDs	65.9 J		46.8	4.03		3.89	5.74 J		4.74
Total HxCDDs	389		46.8	22.5		3.89	31.4		4.74
Total HpCDDs	1610		46.8	91.6		3.89	123		4.74
Total TCDFs	214		9.35	12.3		0.778	17.3		0.948
Total PeCDFs	250 J		46.8	17.5		3.89	22.5 J		4.74
Total HxCDFs	295		46.8	17.6		3.89	25.5		4.74
Total HpCDFs	358		46.8	20.6		3.89	29.9		4.74
Total Adjusted Conc. WHO TEQ (ND=0)	54.9			3.54			3.93		

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Table 1.1 (cont) Results of the Analysis for Dioxins/Furans in Soil
WA# SERAS-089 29 Riverside Avenue (Phase 2 Assessment)
Results Based on Dry Weight

Method SW-846 8290A

Lab Sample ID	2291006	2291007	2291008
Sample No	089-0006	089-0007	089-0008
Location	NS-6	NS-7	NS-7D
% solids	98	92	76

Analyte	Result pg/g	EMPC	RL pg/g	Result pg/g	EMPC	RL pg/g	Result pg/g	EMPC	RL pg/g
2378-TCDD	0.489 J		0.966	1.02 J		4.76	U		4.89
12378-PeCDD	0.906 J		4.83	3.51 J		23.8	3.02 J		24.4
123478-HxCDD	1.15 J		4.83	2.93 J		23.8		2.42	24.4
123678-HxCDD	3.67 J		4.83	7.28 J		23.8	6.09 J		24.4
123789-HxCDD	2.78 J		4.83	6.10 J		23.8	5.28 J		24.4
1234678-HpCDD	68.1		4.83	150		23.8	120		24.4
OCDD	654		9.66	2480		47.6	1700		48.9
2378-TCDF	1.63		0.966	3.33 J		4.76	U		4.89
12378-PeCDF	0.611 J		4.83	1.16 J		23.8	1.45 J		24.4
23478-PeCDF	3.19 J		4.83	3.84 J		23.8	3.67 J		24.4
123478-HxCDF	1.93 J		4.83	5.28 J		23.8	4.41 J		24.4
123678-HxCDF	1.39 J		4.83	2.96 J		23.8	2.65 J		24.4
234678-HxCDF	1.96 J		4.83	4.61 J		23.8	5.29 J		24.4
123789-HxCDF	U		4.83	U		23.8	U		24.4
1234678-HpCDF	13.5		4.83	32.0		23.8	28.4		24.4
1234789-HpCDF	0.690 J		4.83	2.51 J		23.8	2.78 J		24.4
OCDF	22.9		9.66	53.2		47.6	48.8 J		48.9
Total TCDDs	1.50		0.966	4.28 J		4.76	U		4.89
Total PeCDDs	6.20 J		4.83	19.1 J		23.8	9.82 J		24.4
Total HxCDDs	28.1 J		4.83	70.6 J		23.8	41.8		24.4
Total HpCDDs	132		4.83	296		23.8	236		24.4
Total TCDFs	16.9 J		0.966	36.9		4.76	5.68		4.89
Total PeCDFs	32.8 J		4.83	33.5 J		23.8	26.9 J		24.4
Total HxCDFs	32.2 J		4.83	41.5 J		23.8	47.3 J		24.4
Total HpCDFs	33.1		4.83	77.8		23.8	65.4		24.4
Total Adjusted Conc. WHO TEQ (ND=0)	4.9			11.6			8.57		

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Table 1.1 (cont) Results of the Analysis for Dioxins/Furans in Soil
WA# SERAS-089 29 Riverside Avenue (Phase 2 Assessment)
Results Based on Dry Weight

Method SW-846 8290A

Lab Sample ID	2291009	2291010	2291011
Sample No	089-0009	089-0010	089-0011
Location	NS-8	NS-9	NS-10
% solids	97	92	76

Analyte	Result pg/g	EMPC	RL pg/g	Result pg/g	EMPC	RL pg/g	Result pg/g	EMPC	RL pg/g
2378-TCDD	2.66 J		4.84	2.71 J		9.77	15.1		9.96
12378-PeCDD	8.52 J		24.2	U		48.8	20.4 J		49.8
123478-HxCDD	25.0		24.2	2.96 J		48.8	15.3 J		49.8
123678-HxCDD	94.5		24.2	34.0 J		48.8	113		49.8
123789-HxCDD	35.5		24.2	12.8 J		48.8	44.6 J		49.8
1234678-HpCDD	3390		24.2	724		48.8	4580		49.8
OCDD	112000 J		48.4	2630		97.7	41200 J		99.6
2378-TCDF	8.39		4.84	7.33 J		9.77	14.6		9.96
12378-PeCDF	3.96 J		4.84	U		48.8	10.2 J		49.8
23478-PeCDF	9.86 J		24.2	8.29 J		48.8	34.8 J		49.8
123478-HxCDF	17.5 J		24.2	7.99 J		48.8	44.0 J		49.8
123678-HxCDF	13.6 J		24.2	5.57 J		48.8	31.4 J		49.8
234678-HxCDF	24.4		24.2	5.44 J		48.8	45.9 J		49.8
123789-HxCDF	U		24.2	U		48.8	3.05 J		49.8
1234678-HpCDF	270		24.2	58.9		48.8	1030		49.8
1234789-HpCDF	30.5		24.2	U		48.8		43.7	49.8
OCDF	644		24.2	125		97.7	3940		99.6
Total TCDDs	59.9		48.4	12.1 J		9.77	125		9.96
Total PeCDDs	57.6 J		4.84	4.37 J		48.8	193 J		49.8
Total HxCDDs	487		24.2	268		48.8	1040 J		49.8
Total HpCDDs	6830		24.2	1230		48.8	8350		49.8
			24.2						
Total TCDFs	144		4.84	56.3 J		9.77	347		9.96
Total PeCDFs	168 J		24.2	52.0 J		48.8	510 J		49.8
Total HxCDFs	410		24.2	80.1 J		48.8	623 J		49.8
Total HpCDFs	1030		24.2	143		48.8	3300		49.8
Total Adjusted Conc. WHO TEQ (ND=0)	107			21.5			147		

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Table 1.1 (cont) Results of the Analysis for Dioxins/Furans in Soil
WA# SERAS-089 29 Riverside Avenue (Phase 2 Assessment)
Results Based on Dry Weight

Method SW-846 8290A

Lab Sample ID	2291012
Sample No	089-0012
Location	NS-11
% solids	72

Analyte	Result pg/g	EMPC	RL pg/g
2378-TCDD	216		0.983
12378-PeCDD	7.12		4.92
123478-HxCDD	5.43		4.92
123678-HxCDD	7.58		4.92
123789-HxCDD	4.92		4.92
1234678-HpCDD	165		4.92
OCDD	2800		9.83
2378-TCDF	6.53		0.983
12378-PeCDF	6.32		4.92
23478-PeCDF	8.96		4.92
123478-HxCDF	12.9		4.92
123678-HxCDF	4.32	J	4.92
234678-HxCDF	5.20		4.92
123789-HxCDF	0.765	J	4.92
1234678-HpCDF	70.5		4.92
1234789-HpCDF	3.10	J	4.92
OCDF	158		9.83
Total TCDDs	310		0.983
Total PeCDDs	107	J	4.92
Total HxCDDs	145		4.92
Total HpCDDs	362		4.92
Total TCDFs	198		0.983
Total PeCDFs	162	J	4.92
Total HxCDFs	64	J	4.92
Total HpCDFs	158		4.92
Total Adjusted Conc. WHO TEQ (ND=0)	234		

Environmental Response Team/Scientific Engineering, Response and Analytical Services
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Table 2.1 Results of the LCS/LCSD Analysis for Dioxins/Furans in Soil
WA# SERAS-089 29 Riverside Avenue (Phase 2 Assessment)

Laboratory Control Sample: 04/20/11

Analyte	Spike Added pg/µL	LCS Result pg/µL	LCS % Recovery	LCSD Result pg/µL	LCSD % Recovery	RPD	QC Limits RPD	QC Limits % Recovery
2,3,7,8-TCDD	20.0	23.0	115	22.9	114	0	20	70-130
1,2,3,7,8-PeCDD	100	112	112	109	109	3	20	70-130
1,2,3,4,7,8-HxCDD	100	121	121	116	116	4	20	70-130
1,2,3,6,7,8-HxCDD	100	112	112	112	112	0	20	70-130
1,2,3,7,8,9-HxCDD	100	124	124	120	120	4	20	70-130
1,2,3,4,6,7,8-HpCDD	100	106	106	102	102	3	20	70-130
OCDD	200	217	109	213	107	2	20	70-130
2,3,7,8-TCDF	20.0	20.7	104	19.9	100	4	20	70-130
1,2,3,7,8-PeCDF	100	111	111	110	110	1	20	70-130
2,3,4,7,8-PeCDF	100	111	111	113	113	1	20	70-130
1,2,3,4,7,8-HxCDF	100	122	122	118	118	3	20	70-130
1,2,3,6,7,8-HxCDF	100	112	112	116	116	4	20	70-130
2,3,4,6,7,8-HxCDF	100	114	124	111	122	3	20	70-130
1,2,3,7,8,9-HxCDF	100	124	114	122	111	1	20	70-130
1,2,3,4,6,7,8-HpCDF	100	110	110	110	110	0	20	70-130
1,2,3,4,7,8,9-HpCDF	100	104	104	102	102	2	20	70-130
OCDF	200	220	110	220	110	0	20	70-130

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Table 2.2 Results of the MS/MSD Analysis for Dioxins/Furans in Soil
WA# SERAS-089 29 Riverside Avenue (Phase 2 Assessment)
Results Based on Dry Weight

Sample Number 089-0003

Analyte	Sample Result pg/g	MS Spike Added pg/g	MS Result pg/g	MS % Recovery		MSD Spike Added pg/g	MSD Result pg/g	MSD % Recovery		RPD	QC Limits RPD	QC Limits % Recovery
2,3,7,8-TCDD	6.20	19.7	25.5	98		19.3	26.2	104		3	20	60-140
1,2,3,7,8-PeCDD	14.0	98.7	122	109		96.5	123	113		1	20	60-140
1,2,3,4,7,8-HxCDD	12.5	98.7	129	118		96.5	126	118		3	20	60-140
1,2,3,6,7,8-HxCDD	46.0	98.7	139	95		96.5	148	105		6	20	60-140
1,2,3,7,8,9-HxCDD	31.7	98.7	134	104		96.5	135	107		0	20	60-140
1,2,3,4,6,7,8-HpCDD	810	98.7	825	NC		96.5	921	NC		NC	20	60-140
OCDD	7850	197.0	7230	NC		193	7850	NC		NC	20	60-140
2,3,7,8-TCDF	16.3	19.7	34.4	92		19.3	38.1	113		10	20	60-140
1,2,3,7,8-PeCDF	5.56	98.7	103	99		96.5	107	105		4	20	60-140
2,3,4,7,8-PeCDF	23.2	98.7	119	97		96.5	125	106		5	20	60-140
1,2,3,4,7,8-HxCDF	19.0	98.7	142	125		96.5	141	127		1	20	60-140
1,2,3,6,7,8-HxCDF	11.2	98.7	120	110		96.5	120	113		0	20	60-140
2,3,4,6,7,8-HxCDF	19.1	98.7	52.8	106		96.5	47	115		12	20	60-140
1,2,3,7,8,9-HxCDF	U	98.7	124	54	*	96.5	130	48	*	5	20	60-140
1,2,3,4,6,7,8-HpCDF	138	98.7	226	89		96.5	246	112		9	20	60-140
1,2,3,4,7,8,9-HpCDF	8.20	98.7	108	101		96.5	117	112		8	20	60-140
OCDF	273	197.0	462	96		193	488	111		5.5	20	60-140

Environmental Response Team/Scientific Engineering, Response and Analytical Services
2890 Woodbridge Avenue, Building 209 Annex
Woodbridge NJ 08837

Table 2.3 Results of the LabeledStandards/Surrogate Recoveries for Dioxin/Furans in Soil
WA# SERAS-089 29 Riverside Avenue (Phase 2 Assessment)

Method SW-846 Method 8290A

Sample No	Method Blank	089-0001	089-0002	089-0003	089-0004	089-0005	089-0006	089-0007	089-0008	QC Limits
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
13C-2,3,7,8-TCDD	76	85	85	85	77	75	76	81	80	40-135
13C-1,2,3,7,8-PeCDD	85	86	78	81	72	69	71	79	80	40-135
13C-1,2,3,6,7,8-HxCDD	76	77	72	77	68	68	65	65	66	40-135
13C-1,2,3,4,6,7,8-HpCDD	91	79	80	69	66	60	64	76	74	40-135
13C-OCDD	74	64	65	42	42	37	49	64	61	40-135
13C-2,3,7,8-TCDF	84	93	94	93	85	83	84	81	82	40-135
13C-1,2,3,7,8-PeCDF	84	88	82	85	72	71	71	84	84	40-135
13C-1,2,3,6,7,8-HxCDF	72	80	70	77	67	65	63	60	59	40-135
13C-1,2,3,4,6,7,8-HpCDF	82	73	72	66	62	57	60	71	69	40-135

Sample No	089-0009	089-0010	089-0011	089-0012	089-0003MS	089-0003MSD	LCS	LCSD	QC Limits
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
13C-2,3,7,8-TCDD	77	86	72	81	90	94	76	61	40-135
13C-1,2,3,7,8-PeCDD	80	85	63	75	87	92	90	86	40-135
13C-1,2,3,6,7,8-HxCDD	64	82	65	71	76	85	75	73	40-135
13C-1,2,3,4,6,7,8-HpCDD	76	78	57	77	67	79	88	90	40-135
13C-OCDD	80	41	44	44	41	53	77	73	40-135
13C-2,3,7,8-TCDF	79	92	79	89	97	99	85	66	40-135
13C-1,2,3,7,8-PeCDF	83	85	69	76	90	93	86	79	40-135
13C-1,2,3,6,7,8-HxCDF	62	79	64	66	72	80	70	69	40-135
13C-1,2,3,4,6,7,8-HpCDF	71	71	56	70	65	74	80	81	40-135

Lockheed Martin
Scientific Engineering Response and Analytical Services
2890 Woodbridge Avenue Building 209
Edison, NJ 08837-3679
Telephone 732-321-4200 Facsimile 732-494-4021

LOCKHEED MARTIN

Cape Fear Analytical LLC
3306 Kitty Hawk Rd.
Suite 120
Wilmington, NC 28405
910-795-0422
Chris Cornwell
Chris.cornwell@cfanalytical.com

Attn: Chris Cornwell

March 7, 2011

As per Lockheed Martin/SERAS purchase order 7100070243, for Project 0-089, please analyze samples according to the following parameters:

Analysis/Method	Matrix	# of samples
Dioxin SW-846-8290	Soil	17

The samples are expected to arrive at your laboratory the week of April 11th, **All applicable QA/QC** (eg: BS/BSD, LCS, Duplicates, and Blanks) **analysis as per method, will be performed on our sample matrix.** Preliminary sample and QC result tables plus a signed copy of our Chain of Custody must be sent to SERAS 15 business days after each batch of samples. The complete data package is due 20 business days after final sample receipt. The complete data package must include all items on the deliverables checklist.

All sample and QC results must be summarized in a tab delimited file diskette deliverable. .

Please submit all reports concerning this project to **Misty Barkley (732) 321-4205 or misty.barkley@lmco.com**. Any contractual question, please call Joe Rosenberger (732) 321-4215.

Sincerely,
Vinod Kansal

Vinod Kansal
Analytical Support Chemist
Lockheed Martin / SERAS Project

VK:mb Attachments

cc. V. Kansal, D. Bussey, J. Rosenberger, Subcontracting File, D. Killeen, M. Ebel

USEPA

DateShipped: 4/12/2011

CarrierName: FedEx

AirbillNo:

CHAIN OF CUSTODY RECORD

Riverside Avenue

Contact Name: Martin Ebel

Contact Phone: 732-321-4241
412-889-2258

No: 2-041211-105201-0001

Cooler #:

Lab: Cape Fear Analytical

Lab Phone:

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	089-0001	NS-1	Dioxin	Soil	4/12/2011	1	Jar	4 C	N
	089-0002	NS-2	Dioxin	Soil	4/12/2011	1	Jar	4 C	N
	089-0003	NS-3	Dioxin	Soil	4/12/2011	1	Jar	4 C	Y
	089-0004	NS-4	Dioxin	Soil	4/12/2011	1	Jar	4 C	N
	089-0005	NS-5	Dioxin	Soil	4/12/2011	1	Jar	4 C	N
	089-0006	NS-6	Dioxin	Soil	4/12/2011	1	Jar	4 C	N
	089-0007	NS-7	Dioxin	Soil	4/12/2011	1	Jar	4 C	N
	089-0008	NS-7D	Dioxin	Soil	4/12/2011	1	Jar	4 C	N
	089-0009	NS-8	Dioxin	Soil	4/12/2011	1	Jar	4 C	N
	089-0010	NS-9	Dioxin	Soil	4/12/2011	1	Jar	4 C	N
	089-0011	NS-10	Dioxin	Soil	4/12/2011	1	Jar	4 C	N
	089-0012	NS-11	Dioxin	Soil	4/12/2011	1	Jar	4 C	N

Special Instructions: Collection times taken from sample labels. COC 13APR11

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
Samples		4-12-11	Cynde Larkin	4/13/11	0940						

WO#2291

temp. = 2.5°